

AMENDMENTS TO THE SPECIFICATION

Please replace the TITLE with the following:

Low-K Interlayer Dielectric Wafer Grinding- Wafer Grinding Method

Please replace the ABSTRACT with the following:

Methods for grinding low-K interlayer dielectric (ILD) wafers are described herein. In various embodiments, the method may comprise cutting and severing a semiconductor wafer into a plurality of portions, the cutting and severing being performed in a manner that allows the portions to remain disposed with each other as if the semiconductor wafer had not been cut, applying a tape to a front side of the as if uncut semiconductor wafer, and grinding a backside of the taped as if uncut semiconductor wafer. In various other embodiments, the method may comprise attaching an adhesive to a backside of the semiconductor wafer prior to cutting the semiconductor wafer along the streets of the semiconductor wafer with the scribed lines to cut and sever the semiconductor wafer into a plurality of portions, with the portions remaining proximally disposed to each other and held in place by the adhesive as if the semiconductor device had not been cut.

Please amend Brief Description of the Drawings, page 3, lines 11-14 as follows:

Figure 3 ~~**Figures 3a-3h**~~ ~~illustrates~~ illustrate a grinding method for a semiconductor wafer having a low-K ILD layer, in accordance with one embodiment; and

Figure 4 ~~**Figures 4a-4f**~~ ~~illustrates~~ illustrate a grinding method for a semiconductor wafer having a low-K ILD layer, in accordance with another embodiment.

Please amend Detailed Description of Illustrative Embodiments, pages 6-7, discussion pertaining to Figure 3 as follows:

~~**Figure 3**~~**Figures 3a-3h** ~~illustrates~~ illustrate a grinding method for wafer 202 in accordance with one embodiment. In ~~**Figure 3**~~ **Figure 3a**, for the embodiment, a backside ~~309~~ of wafer 202 may be mounted with an adhesive or wafer mounting tape

312(a). In the embodiment, laser **303** forms laser scribe lines **206** along sides of streets on front side **205** of wafer **202** to form trenches in the low-K ILD layer as described in **Fig. 2** above. Further, as shown in **Figure 3b**, for the embodiment, a saw **322** may then dice or cut wafer **202** along the formed trenches to a width similar to saw kerfs **208** (see **Fig. 2, 208**) to singulate wafer **202** into a plurality of individual dice at **314**. Note that for the embodiment, the dice may be singulated but are retained on mounting tape **312(a)**.

Note that in various embodiments, other laser scribing and sawing methods may be used to partially dice or dice wafer **202**. For example, although not pictured, laser **303** may form trenches in the low-K ILD layer along streets of wafer **202** that may be wider than the saw kerfs **208** in another embodiment.

Next and as shown in **Figure 3c**, a backgrind tape or grinding protection tape **302** may be attached to wafer **202** to protect dice on front side **205** during grinding in the embodiment. In various embodiments, grinding protection tape **302** may be any type of protective layer or protective coating to protect front side **205** of wafer **202** during grinding.

Next and as shown in **Figure 3d**, grinding protection tape **302** and mounting tape **312(a)** may be cut at **316** to define a perimeter **324** of wafer **202** or approximate a shape of wafer **202**. Further and as shown in **Figure 3e**, for the embodiment, mounting tape **312(a)** may be removed from backside **309** of wafer **202** to prepare for grinding. **Figure 3f** illustrates that ~~Wafer wafer~~ **202** may then be mounted face-down on a vacuum chuck **306** so that grinding chuck **320** may grind wafer **202** to a desired wafer thickness. Note that in the embodiment, cracks created in a low-K ILD layer of wafer **202** during grinding or sawing may not propagate because wafer **202** has already been singulated into individual dice.

Finally, in the embodiment, backside **309** of thinned and singulated wafer **202** may be mounted with mounting tape **312(b)** onto a wafer frame **325**, as shown in **Figure 3g**. In the embodiment and as shown in **Figure 3h**, grinding protection tape **302** may then be removed or de-taped from ~~upper surface 205~~ of wafer **202**.

Please amend Detailed Description of Illustrative Embodiments, pages 7-8, discussion pertaining to Figure 4 as follows:

~~Figure 4~~ Figures 4a-4f ~~illustrates~~ illustrate a simplified embodiment of the grinding method of wafer 202 illustrated in ~~Figure 3~~ Figures 3a-3h. Note that for the embodiment of ~~Figure 4~~ Figures 4a-4f, wafer 202 need not be mounted prior to laser scribing. For example, in one embodiment, wafer 202 may be held on a vacuum chuck during laser scribing (not shown). Thus, mounting tape 312(a) need not be later removed from wafer 202 nor cut to define a perimeter 324 of wafer 202 as described in ~~Figure 3~~ Figures 3a-3h. In ~~Figure 4~~ Figure 4a, laser 303 may form laser scribe lines 206 along either side of streets on front side 205 of wafer 202 to form trenches in the low-K ILD layer in the embodiment. As shown in Figure 4b, ~~Wafer~~ wafer 202 may then be singulated at ~~314~~ by a saw 322 into a plurality of individual dice. Note that in another embodiment, wafer 202 may be diced to a thickness deeper than a final desired wafer thickness but not completely through the wafer. Next and as shown in Figure 4c, for the embodiment, grinding protection tape 302 may be attached to front side 205 to protect front side 205 of wafer 202 during grinding.

For the embodiment and as shown in Figure 4d, wafer 202 may then be mounted face-down on vacuum chuck 306 to be grinded by grinding chuck 320 to a desired wafer thickness. Note that in the embodiment, cracks created in a low-K ILD layer of wafer 202 during grinding may not propagate because stresses may be distributed more evenly across wafer 202 as wafer 202 has already been singulated into separate dice.

Finally, for the embodiment and as shown in Figure 4e, backside 309 of grinded and singulated wafer 202 may be mounted with mounting tape 312. In the embodiment and as shown in Figure 4f, wafer 202 may be mounted onto a wafer frame 325. Grinding protection tape 302 may then be removed or de-taped from front side 205 of wafer 202.